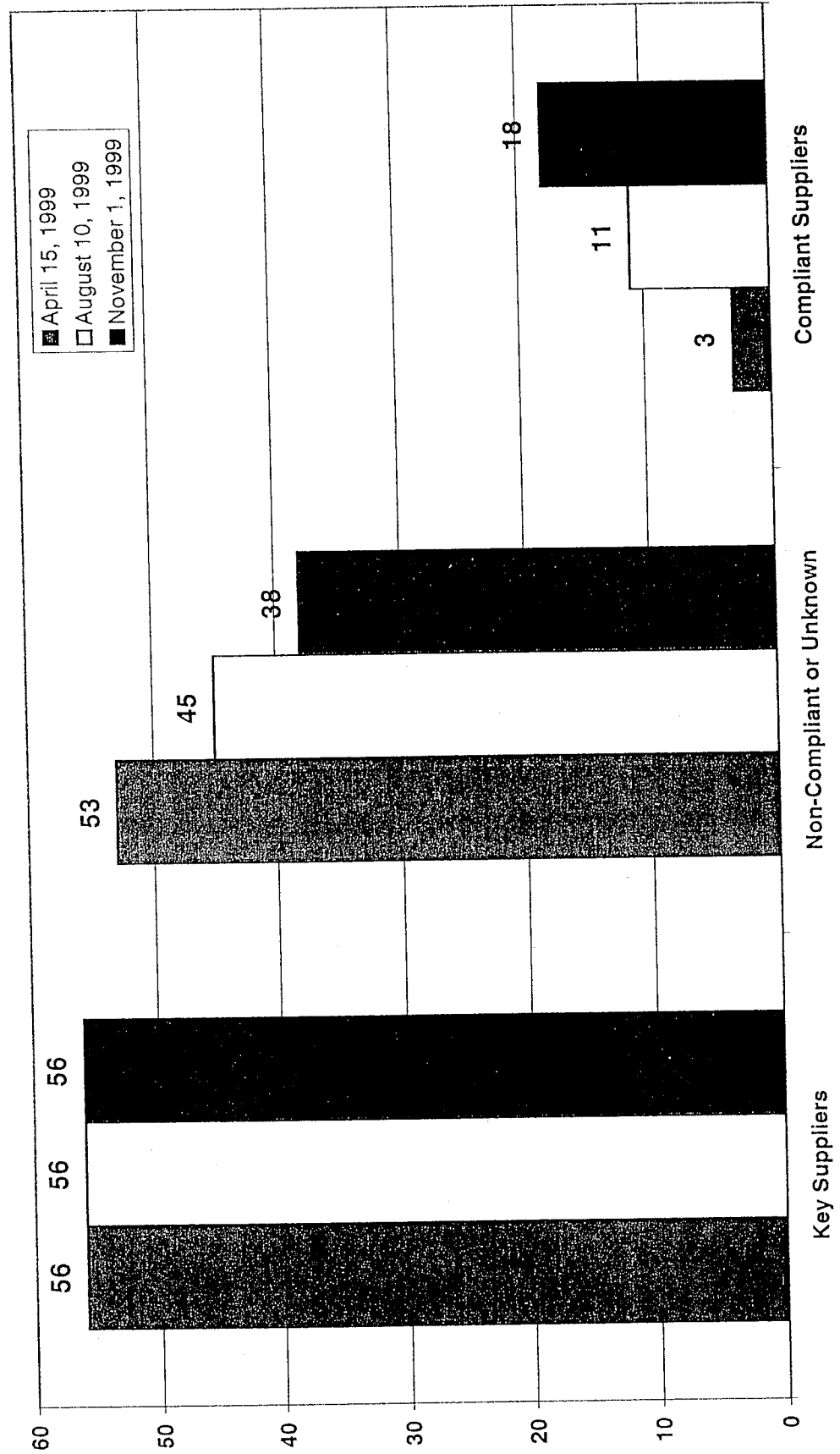


National Forge Company UK Operations

Key Suppliers Y2K Compliance Status

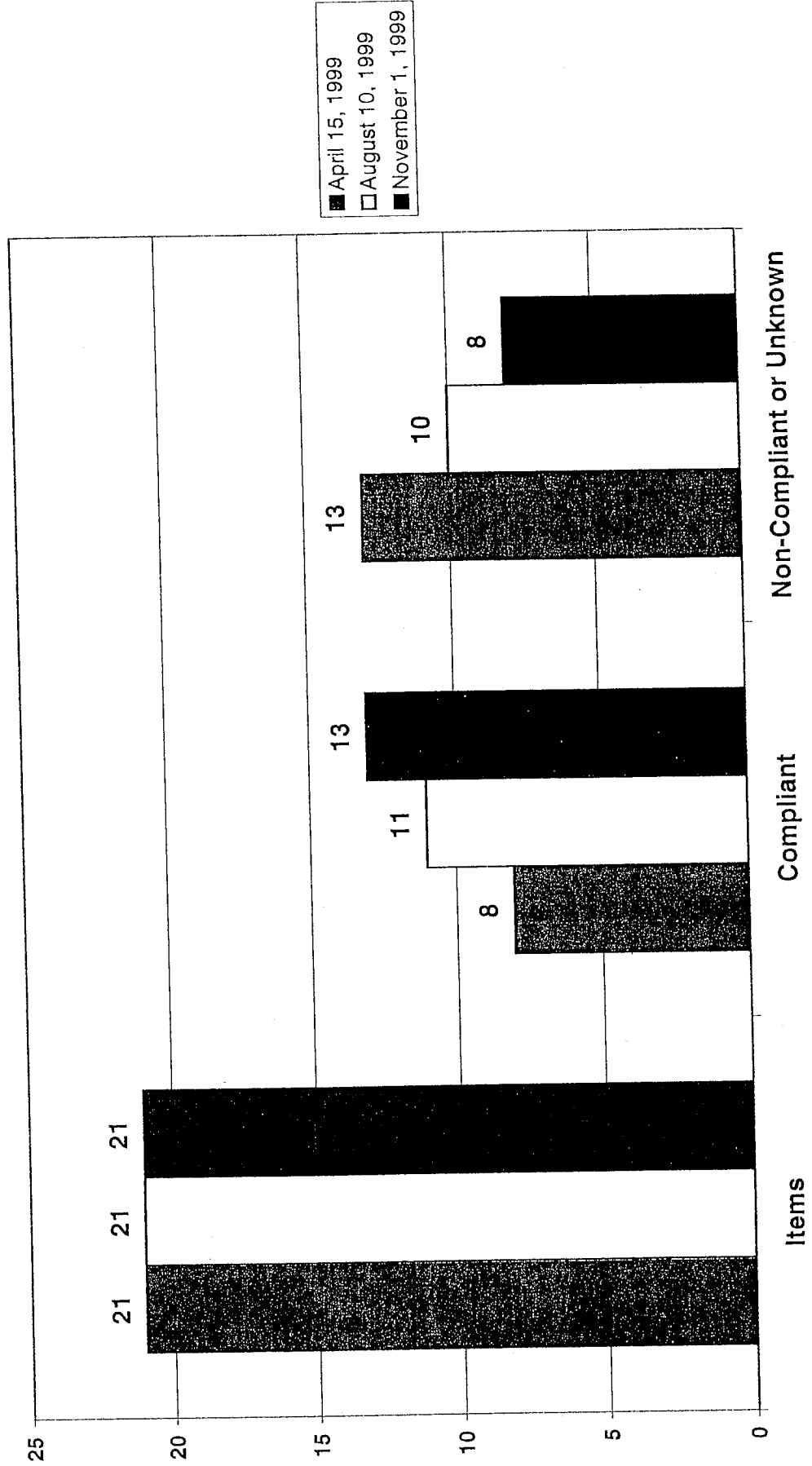


11/3/99

UKkey

National Forge Company UK Operations

Manufacturing Equipment/Systems Y2K Compliance Status

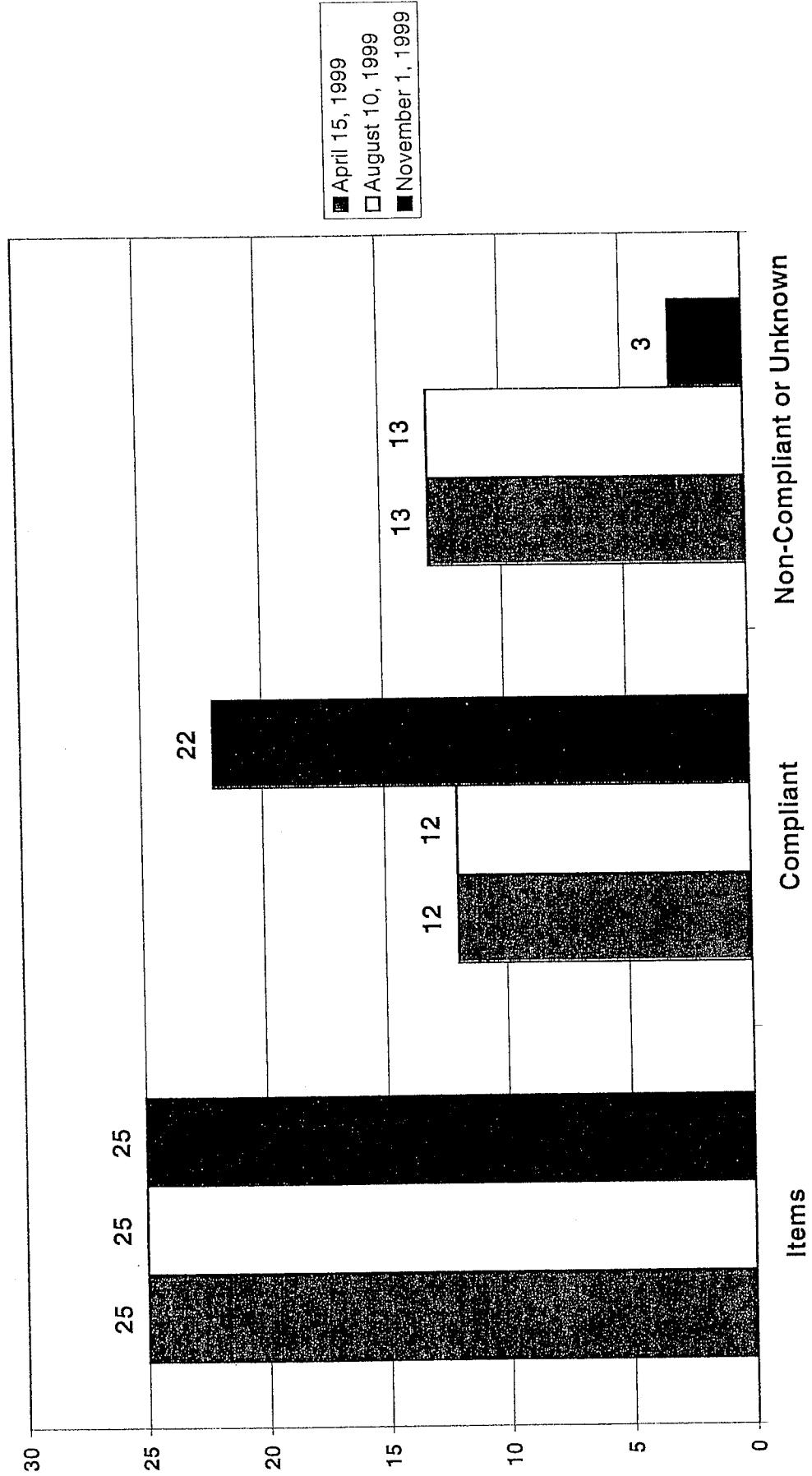


11/3/99

UKmfg

National Forge Company UK Operations

Information Systems Y2K Compliance Status



11/3/99

UK info

NATIONAL FORGE COMPANY®

Employee Owned

memorandum

October 29, 1999

The current status of the Y2k Contingency Plan for the areas of Manufacturing/Operations and Purchasing is as follows:

- Key material resources where typically a 1-to-3 day inventory is maintained will be increased to 3-to-6 day inventory. This action has been conveyed to the suppliers and will be released for receipt in early December.
- The orderly shutdown plan of melting, forging and heat-treating has been developed and will be implemented on or about 12/28/99 depending on cycle times for the products involved.
- A team of 18 employees has been organized and will be on duty for emergency calls on 1-1-00 and to provide Plant protection if necessary. The most concerning issues are outlined in the attached Memo dated October 4, 1999.

Thanks


CRO: gk
Attachment

NATIONAL FORGE COMPANY®

Employee Owned

memorandum

October 4, 1999

TO:

W. Bailey	W. Kramer
T. Carson	C. Mason
S. Castano	H. Murphy
C. DiLuzio	J. Nicholson
J. English	J. Schultz
T. Fitzgerald	P. Shine
D. Haupin	G. Turk
J. Harris	J. Weber
R. Johnson	D. Wolfgang
	B. Zischkau

FROM: C. R. Olson

SUBJECT: Y2K

From our meeting of today and contained herewith is a list of concerns and thoughts that must be analyzed and considered as a part of our contingency plan for year 2000. The biggest and most concerning issue is how to deal with the loss of heat. We unanimously agree that a loss of heat for a sustained period would be very damaging to operations, plant and equipment. What is particularly alarming is that we probably cannot do enough to protect everything if we were to lose gas and electric energies to our boiler.

If there is a bright side to it, it is the fact that the utilities, both gas and electric have been declared Y2k compliant and there should be little cause for concern. We will however continue to discuss and evaluate alternatives to this concern. All other issues deserve consideration and the use of common sense on the approach must prevail. Please give all ideas further thought. A follow up meeting will be scheduled towards the end of October.

Utilities priority: gas – electric – water
Gas Y2k ready – 2 incoming sources

- No melt after 12/31, 9:00 a.m.
- Need water pumping and supply
- No heat treating (PF, HT, Nitride) after 12/31, 9:00 a.m.
- No Forge Shop after 12/31, 9:00 a.m.
- #7 Water well – electric/diesel (natural gas) p.m. check propane orifice
- Coal Boiler (more electric power for coal)
Need for generator, gas boiler takes less electric power
Stand-by power source
Need kw est to run bare essentials (min. electric steam –water)

Page Two
October 4, 1999

- Gasoline supply "top off"
- Hand-held flashlight (extra batteries)
- Portable radio batteries (extra)
- Ammonia Tank – keep from freezing
- Bar heater transformer, water circulation (keep from freezing – blow out)
- Transformers with water circulation system (correct shutdown methods, if necessary)
- Electricity loss waste water pumps
Re: back up lagoon overflow
- 780/942 & Henry systems – quality mobile met additive (keep it from freezing)
- Manpower – Electric/pipe/m. maint./CI/const./misc.
Department heads need to control their effective utilities, emergency lighting system runs on natural gas fuel
Heat sources – wood burner – oil burner – quincy ingots (hot) to be used for heat
- CNC equipment battery backup

Thanks

CRO:gk

Y2K Contingency Plan - Purchasing

11/1/99

Material	Supplier	Qty
Refractory brick for Fce & DH	Onex	Consignment - any necessary items will be in stock either at Onex or NFC.
Nickel	Falconbridge	Required approx. 5,000 lbs (based upon current usage of approx. 2000 lbs per week we will purchase 1/2 truckload of nickel around 12/20/99 which will ensure adequate inventory thru end of year)
Moly Oxide	Climax/Cyprus	Will review the 1st part of December to ascertain whether inventory will cover - if not, can purchase
Other Alloys	Various	Have quarterly contract for our requirements on alloys - normally order material when inventory reaches amount to cover 2 weeks - inventories are reviewed each week - can release extra material is necessary.
LNU6688's & other freq. used carbide	Various	Insert brands can be interchanged. Frequently used carbide is on consignment in the Storehouse. (Typically have 1 - 2 week inventory in-house at all times)
Taps, reamers, drills	Kennametal Tool & Die & Cross	Kennametal - on consignment in Storehouse Taps for use on penetrators are in stock at Cross or Tool & Die (Typically have 1 - 2 week inventory in-house at all times)
Boring Heads	Hamilton Mach.	Keep in stock in Boring office - carbide used with boring heads in in Stores. Hamilton also keeps inventory in stock at their facility. (Typically have 1 - 2 week inventory in-house at all times)
Oxygen & Nitrogen & Liquid Hydrogen	Praxair	Bulk tanks at NFC - stock to be checked early Dec.
Weld Wire	Welders - MG Ind	Stock at NFC - Stock also at Welders Supply in Jamestown or MG Industries in Bradford (Typically have 1 - 2 week inventory in-house at all times)
Steady rest bearings	Applied	Stock at NFC & at Applied in Jamestown (Typically have 1 - 2 week inventory in-house at all times)
Coal for Boiler	Various	Stock in hopper at NFC - stock in Pgh/Buffalo warehouse Will Check hopper early December

Grinding Wheels	Various	54" grinding wheels - consigned at NFC Additional wheel on order from Norton (spare) Other sizes kept in NFC Stores (Typically have 1 - 2 week inventory in-house at all times)
Oils	Guttman	Mobil oil product - frequently used items in stock at NFC, other oils in stock at Guttman, Erie, PA (Typically have 1 - 2 week inventory in-house at all times)
Cutting Oil		Stock at NFC (Typically have 1 - 2 week inventory in-house at all times)
Boring Woods		Stock at NFC, items available from 2 different sources (Typically have 1 - 2 week inventory in-house at all times)
Sandpaper, grinding discs, belts, etc.	Various	Sandcap & Norton products on consignment in Stores, 3M products in stock at NFC & Gage Co, Tittsville (Typically have 1 - 2 week inventory in-house at all times)
Coolant Fluid	D A Stuart	Bulk Tank at NFC Will check early December
Parabolic Drills	James H Cross	Stock at NFC & at Cross Co. (Typically have 1 - 2 week inventory in-house at all times)
Lumber	Nicholson & Cates	Consignment stock at NFC (Typically keep 2 - 3 week inventory)
Wire Rope	Amick Assoc.	Consignment stock at NFC (Typically have 1 - 2 week inventory in-house at all times)
Nails for shipping	Duo-Fast	Stocked at Shipping Dept - Blanket order with Duo-Fast Shipping keeps a 2 - 3 week stock at all times
Hone Stones	General Hone	Will be ordering stones in December normally - will have adequate inventory to cover extra week
Selnite Power & Liquid Nitride	Chau. Metal Finish	Will normally order during December - will cover any additional requirement.
Gas tanks for fork trucks	Ferrell Gas	Will order 2 extra cylinders in December.

All items to be reviewed week of December 18, 1999.

11/1/99

UPDATE ON THE Y2K EFFORTS AND RELATED CONTINGENCY PLANS OF INFORMATION SYSTEMS

We have a very high level of confidence in our ability to function and deliver our services on and after January 1, 2000. We began the process of converting files and programs and testing them over two years ago. It should be noted that anything related to the financial system is already operating in year 2000. Production Planning has been dating and retrieving orders and related information from year 2000 and beyond for over a year. Even so, we will take the prudent approach and continue with additional testing on major systems and programs.

As to contingency plans for the areas for which we are responsible, there are several things we will be doing. The weekly full system back up will be done on Friday Dec. 31, 1999 after 5:00PM rather than Sunday January 2, 2000, which would be normal. The I.S. staff will be in on Saturday to check out all systems. In the unlikely event of a power loss we will shut off all water lines, to prevent any damage to electronic equipment in the event of frozen pipes. I have sent a separate document showing our plans for the phone system, but basically we feel we have adequate coverage with our built in contingency plan. This gives us nine phones that will operate independently of the switch. In addition we have four phones that operate in by-pass mode if power to the switch is off. The Company also has five cell phones. We already have a power filter to eliminate spikes and surges in the electricity to the phone switch. Bell Atlantic at their Youngsville switching facility has a back-up generator.

We are prepared to support the payroll department in any plan they have to offer a contingency pay for up to a two week period. After processing the normal payroll on December 28 we will have the necessary information and the time to prepare additional checks if required.

In summary we will continue to look at everything we do but we feel comfortable with our position.

Glenn

YEAR 2000 TELEPHONE CONTINGENCY

Lucent Telephone Switch:

If the electric goes down there are four by-pass telephones that will work for outgoing calls only. They are:

- Ext. 5100 – Electric Shop
- Ext. 6721 – Behind the switchboard
- Ext. 5299 – In the switch room
- Ext. 5555 – Emergency -- located at the gatehouse, first-aid and Dave Tipton's office

Lucent also set Ext. 5555 to ring when someone from the outside calls 563-7522.

The following telephone numbers are wired directly through Bell and do not go through the telephone switch:

- 563-3160 – Phone on Fax at Shipping
- 563-3377 – Roger Clark
- 563-4472 – First Aid
- 563-4525 – Phone on Fax at QA
- 563-7550 – Phone on Fax at Purchasing
- 563-7947 – Chuck Olson
- 563-7951 -- Information Systems
- 563-9209 – Phone on Fax at Corp. 2nd Floor
- 563-9269 – Gatehouse

NF also has five (5) cell phones:

- 730-7931 – Treasury
- 730-7941 – Marketing
- 730-7942 – Marketing
- 730-9192 – Chuck Olson
- 730-4385 – Chuck Olson

If electric goes out at the Youngsville switch building, Bell Atlantic has a diesel generator that will go as long as you keep putting fuel in it.

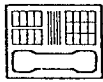
YEAR 2000 TELEPHONE CONTINGENCY



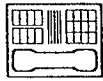
563-7550
Purchasing
in & out



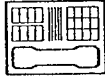
563-7951
Information Systems
in & out



x5555
Dave Tipton
out only



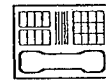
563-7947
Chuck Olson
in & out
cell phones also
730-9192
730-4385



x5100
Electric Shop
out only



563-3160
Shipping
in & out



x5555
Gatehouse
out only
563-7522 in only



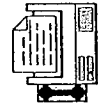
563-9269
Gatehouse
in & out



563-4472
First Aid
in & out

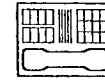


x5555
First Aid
out only

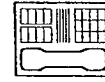


563-4525
QA
in & out

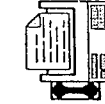
CORPORATE OFFICE



x5299
Switchroom
out only



563-3377
Roger Clark
in & out



563-9209
Corp 2nd Fax
in & out



x6721
next to
Switchboard
out only

Three (3) cell phones
730-7931
730-7941
730-7942

MITCHELL, SHACKLETON & CO. LIMITED
NORTHWEST FORGEMASTERS LIMITED
GLOBAL CRANKSHAFT SERVICES LIMITED

YEAR 2000 UPDATE

10-August 1999

The Year 2000 Project is due to be completed by 30 September 1999. During the last two months our efforts have mainly concentrated on the installation and testing of the two new computer networks at Eccles and Hyde. This has included the upgrade of all accounting software and a migration to Microsoft Office.

During this time we have continued to receive replies to our Y2K questionnaires. In early September we shall be contacting all suppliers that have not responded to our letters with a view to assessing their readiness or not to the Y2K problem. Final contingency plans will then be prepared.

At the present time we have a draft contingency plan for 1 January 2000 but this will be expanded during October.

Y2K CONTINGENCY PLAN

1. CONSUMABLE SUPPLIES

During September 1999 all department heads/foremen are to review stock levels of consumable stores including works and office supplies. Purchase requisitions are then to be raised to ensure that sufficient stocks will be obtained in October/November 1999 that will last any production/office needs until 31 January 2000.

2. PRODUCTION MATERIALS

All forging orders are to be placed before the Christmas break wherever possible on the assumption that the forging suppliers are unable to process orders during the early part of January 2000.

3. SITE INSPECTION

Both locations are to be inspected by a responsible official on Saturday 1 January 2000. A tour of both offices and the plant will be carried out to establish that the following essential services exist:

- a) Electricity
- b) Gas
- c) Water

In the event that any one of the above supplies are not available the relevant utility company will be contacted by phone/fax/email. This will help to ensure that an early start is made on the resumption of supply before Tuesday 4 January 2000 when production is due to start following the Christmas break.

An emergency contact list with telephone/fax/email numbers will be made available prior to the Christmas break.

4. COMPUTER / SOFTWARE FAILURE

4.1) PRODUCTION

It has been identified that there is no critical production software and most production hardware has been confirmed as being compliant. In the event of machine failure our normal service engineers will be contacted but timely response cannot be guaranteed. Due to the small number of automated production machines alternative production methods will be planned to make use of the manually operated machines. Although not all operations can be carried out on alternate machines it should be possible to mitigate the loss of production capacity.

Time-recording systems – if the time recording system fails then foremen will be responsible for keeping an accurate record of hours worked. Each machine operator currently produces a manual time sheet for recording manufacturing times and this will continue.

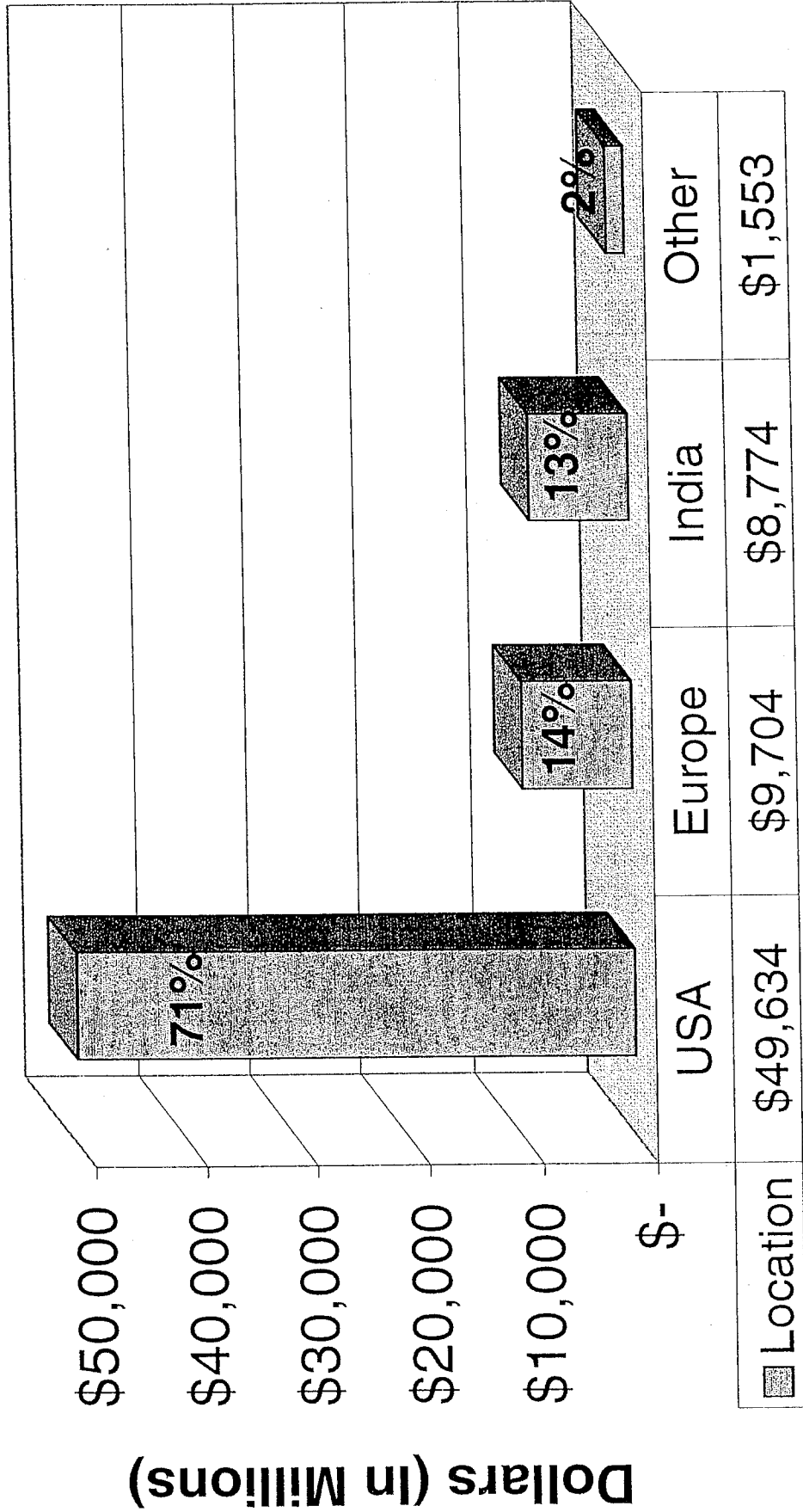
Further planning/discussions are to be held during September 1999.

4.2) ACCOUNTING SERVICES

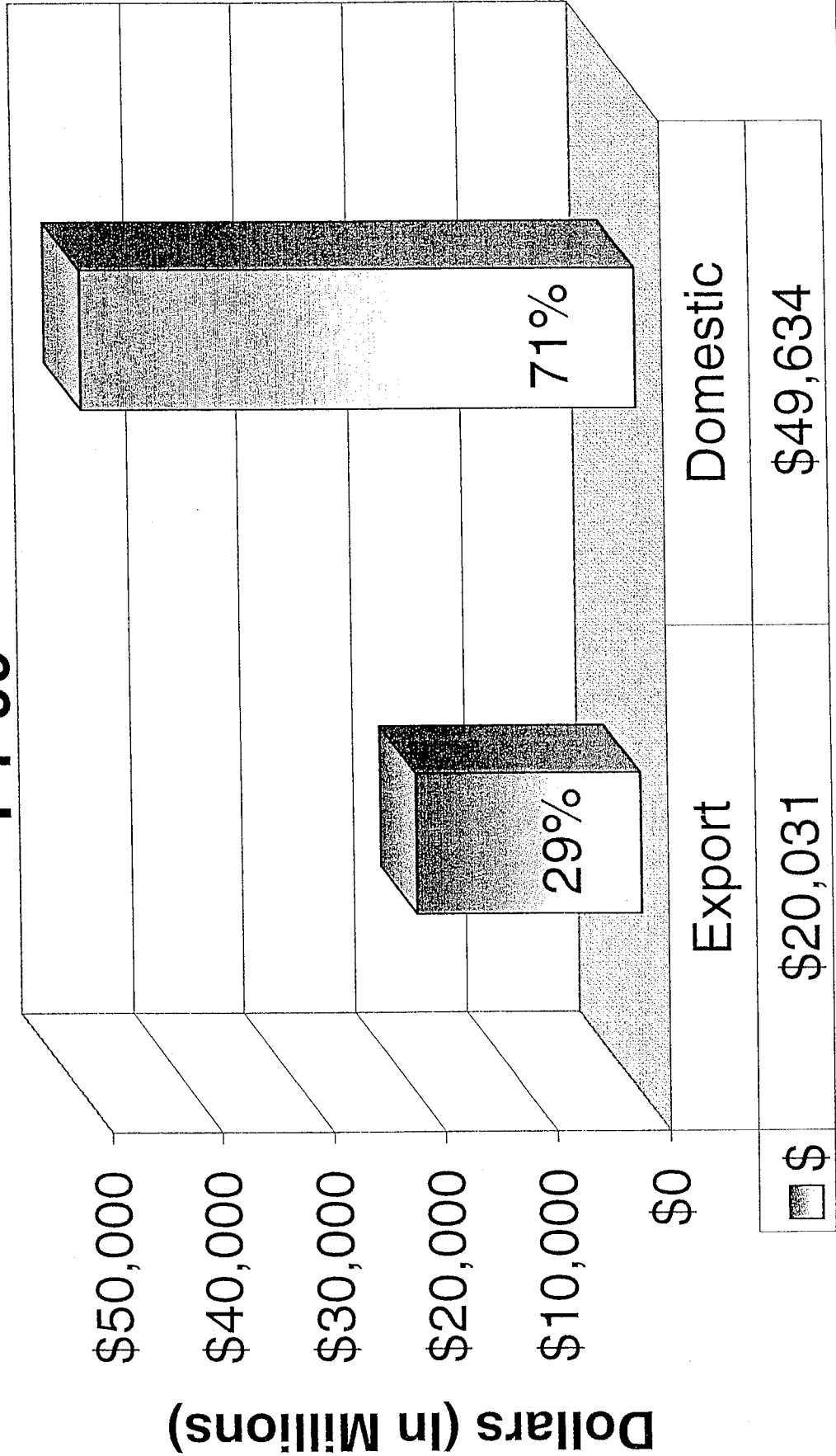
Prior to the Christmas break hard copy reports will be obtained for all key information including full details of debtor and creditor balances. All systems will be backed up and the backup stored off site.

In the event of computer or software failure on 4 January 2000 no immediate problem is foreseen. All suppliers could be paid by manual cheque and all debts could be chased by telephone/fax/email/post from the hard copy reports. All sales enquiries/orders can be manually evaluated or processed. If the system was not recoverable within ten days an alternative stand alone accounting system would be established using a notebook computer. This would enable normal accounting services including the production of accounts to be resumed.

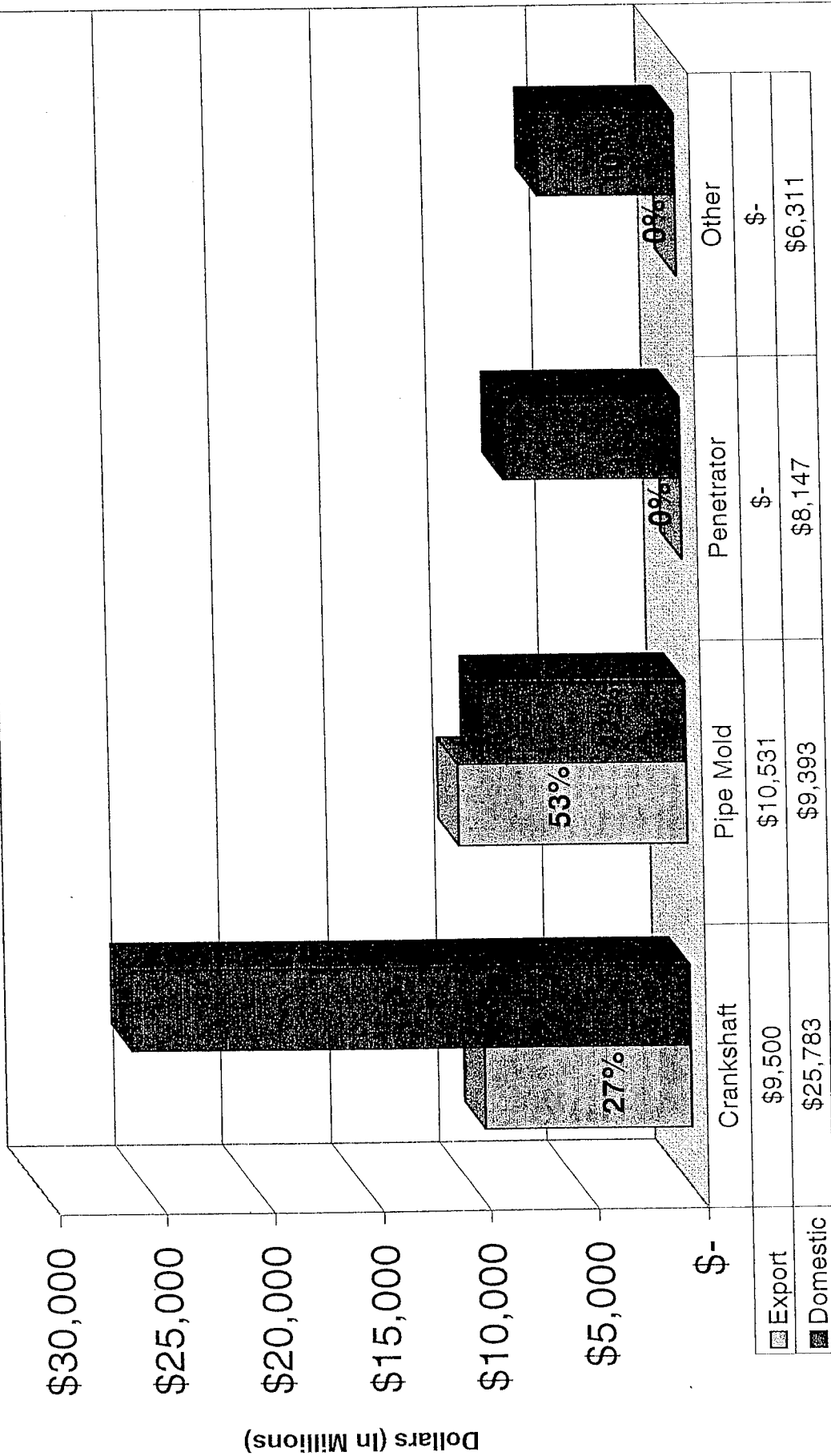
Irvine Sales - Geographically FY 99



Irvine Sales - Export vs. Domestic **FY 99**



Irvine Sales - By Product FY 99



Top Customer - Irvine

	FY'99 Account Value	% of Actual FY'99 Sales	
<hr/>			
<u>Crankshafts</u>	\$ Millions		
General Electric (GETS)	\$ 19.2	28%	Expects 10% price reduction
DLW	\$ 5.6	8%	Park Ohio threatens
MWM	\$ 2.6	4%	Park Ohio threatens
		<hr/> 39%	
 <u>Pipe Molds</u>			
McWane Group	\$ 3.3	5%	Buys on price
PAM Group	\$ 2.9	4%	Aggressively shops on price
U.S. Pipe	\$ 2.2	3%	Prefers NF: negotiating Master Order
Biwater Pipe	\$ 1.8	3%	Have had to give price concessions
Charlotte Pipe	\$ 1.3	2%	Content with NF for now
Electrosteel	\$ 1.2	2%	Using Ring Mill to lower NF prices
Griffin Pipe	\$ 1.2	2%	Using Ring Mill to lower NF prices
		<hr/> 20%	
 <u>Paper Rolls</u>			
United Container	\$ 1.8	3%	Orders taken for fixed cost absorption
 <u>Ordinance</u>			
Govt of Israel	\$ -		Prefers NF, but pressure to use others Large order of \$ 2.7 MM to ship in FY'00
 <u>Penetrators</u>			
Dept .of Defense	\$ 8.0	11%	NF No. 1 source but position threatened by Wyman Gordon, and Watervliet Arsenal Will be over 20% of total in FY'00
		<hr/> 73%	
Total	\$ 69.7		

National Forge Company
Board Meeting, November 5, 1999

CONFIDENTIAL

Key Competitors Irvine Plant

- Ohio Crankshaft Division of Park Ohio Industries
Cleveland, Ohio

Main competitor for US traction market crankshafts. \$15-18 Million sales, mostly for EMD type cranks. Parent company, Park Ohio Industries, is \$715 Million Annual Sales, with \$17 Million Annual Net Income. Is sole source to EMD for new builds; also is leading supplier to the aftermarket. Buys crankshaft forgings from sister unit, Park Drop Forge. Main source for camshafts for EMD engines.

Has cost advantage over Irvine, primarily due to lower labor costs and ability to drop forge EMD crankshafts in halves.

Has built and is debugging a new crankshaft forging press that was designed to copy Irvine's Loewy Press. This will allow Ohio to forge longer single piece cranks i.e. General Electric and the new EMD higher horsepower engine cranks.

- Alfing Kessler GmbH
Aalen, Germany

Privately held full line crankshaft producer, from automobile size to large power generation size. Over 90% of business is crankshafts. Total sales \$100 Million; employs 1100 people, company is consistently profitable. Major crankshaft competitor in Western Europe and principal supplier to German customers especially MAN. Manages to be price competitive in export markets despite high labor costs. Has been sole source to Caterpillar for its 3600 series engines in the US for years. Has wide range of facilities, including drop forging and TR crankshaft forging system, produces cranks to 11.5 meters; uses drop forging for cranks to 4 meters.

- Kobe Steel Casting and Forging Group
Iron and Steel Division
Kobe Steel Ltd.
Kobe Japan

Fully integrated forging, casting, and crankshaft producer, major supplier to Japan and dominant Asian supplier. Group Sales approx. \$200 Million, employs 600 plus subcontractors (up to 400), profits undisclosed. Crankshaft business is about \$100 Million. Can produce truck size cranks on up to very large ship propulsion and power generation cranks. Competes worldwide and uses exchange rate variations to advantage. Has one hammer plus 6 forging presses up to 13,000 tons. They use the RR process for larger cranks, which achieves results comparable to the TR process. Capacity of the RR machine is 300 pieces per month. They claim they have 45% of the marine crankshaft market worldwide.

National Forge Company
Board Meeting, November 5, 1999

CONFIDENTIAL

- Sadefa
Fumel, France

Primarily a gray and malleable iron foundry complex, Sadefa produces small diameter pipe molds, up to 300mm, from castings and or purchased forgings. Total Sales of about \$80 Million, employees about 650. Company has been consistently unprofitable and has undergone repeated restructurings with publicly funded loans and subsidies.

- Ring Mill Spa
Dubbino, Italy

Family held forging company produces flanges, oilfield goods, valves, pressure vessel parts, pipe molds, ordnance. Total sales \$35-40 Million, employs 175 plus subcontractors; shows small profit. Has a ring mill, 3500 ton, 3000 ton, and 1300 ton presses; mandrel forges pipe molds from 12" and up. Has 7 heat treat hearth furnaces plus 6 pit furnaces, 3 quench tanks. Has 5 horizontal lathes capable of producing pipe molds, all are CNC. Has one honing machine. Has marketed pipe molds worldwide for last two years at prices consistently 15 to 30% below National Forge. Plans to add another forging press.

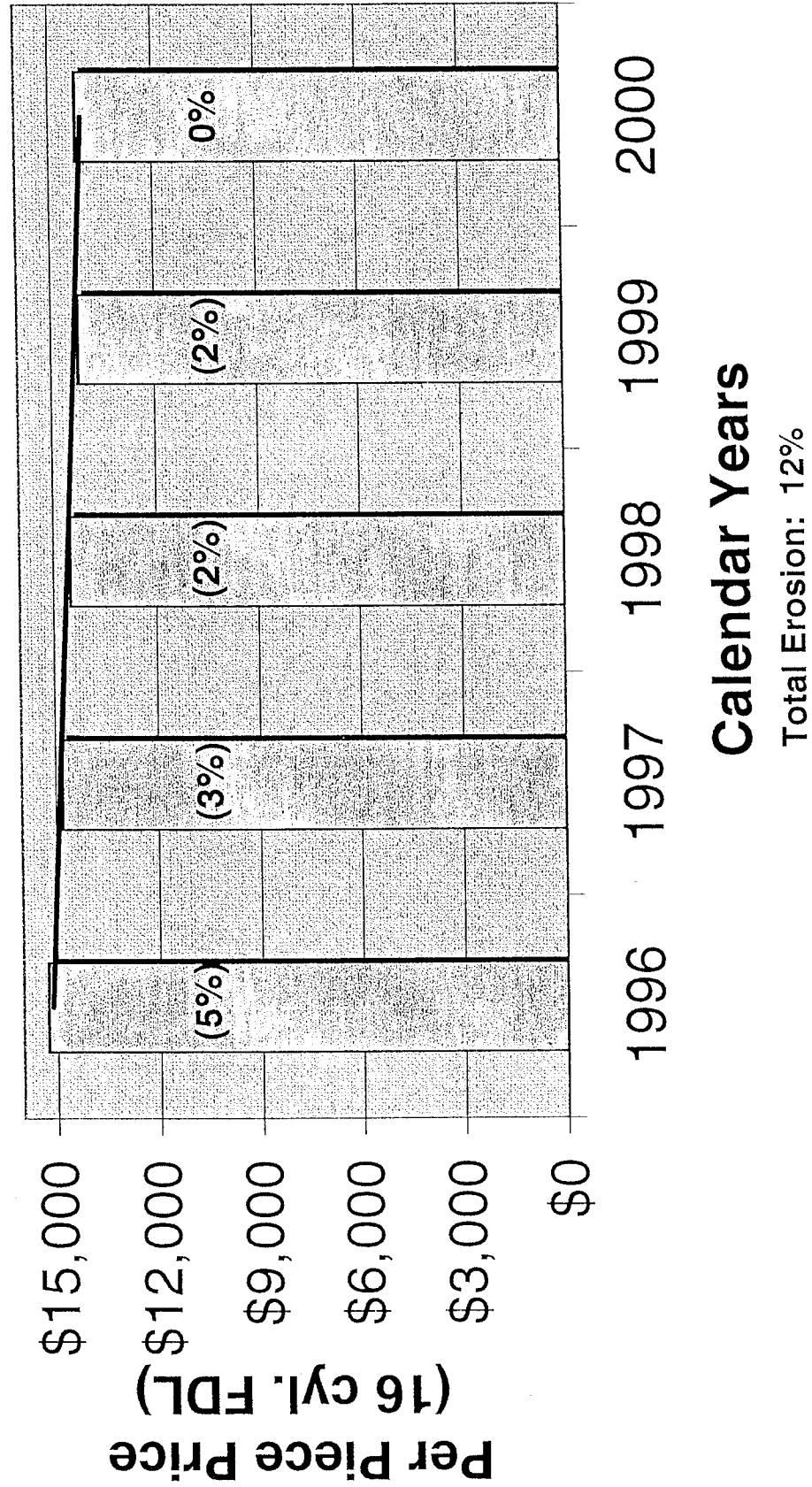
- Wyman Gordon Co.
(former Cameron Forged Products Division)
Houston, Texas

Total company Sales were \$849 in FY'99 (ended 5/99) with net income of \$37 Million or 4.3%. Serves three segments: aerospace, energy, and other markets. The other markets segment contains the former Cameron Forge facility and had Sales of \$ 26 Million in FY'99. This segment competes with National Forge on penetrators. In Houston, Wyman has a dedicated 60,000 sq. ft. production line (after heat treat) for making penetrators. The forging process is to produce the 2000# body by extrusion on a multi ram 20,000 ton press. They have forging presses to 35,000 tons. Wyman has in house facilities for phosphatizing and painting. A purchase of Wyman by Precision Cast Parts is pending.

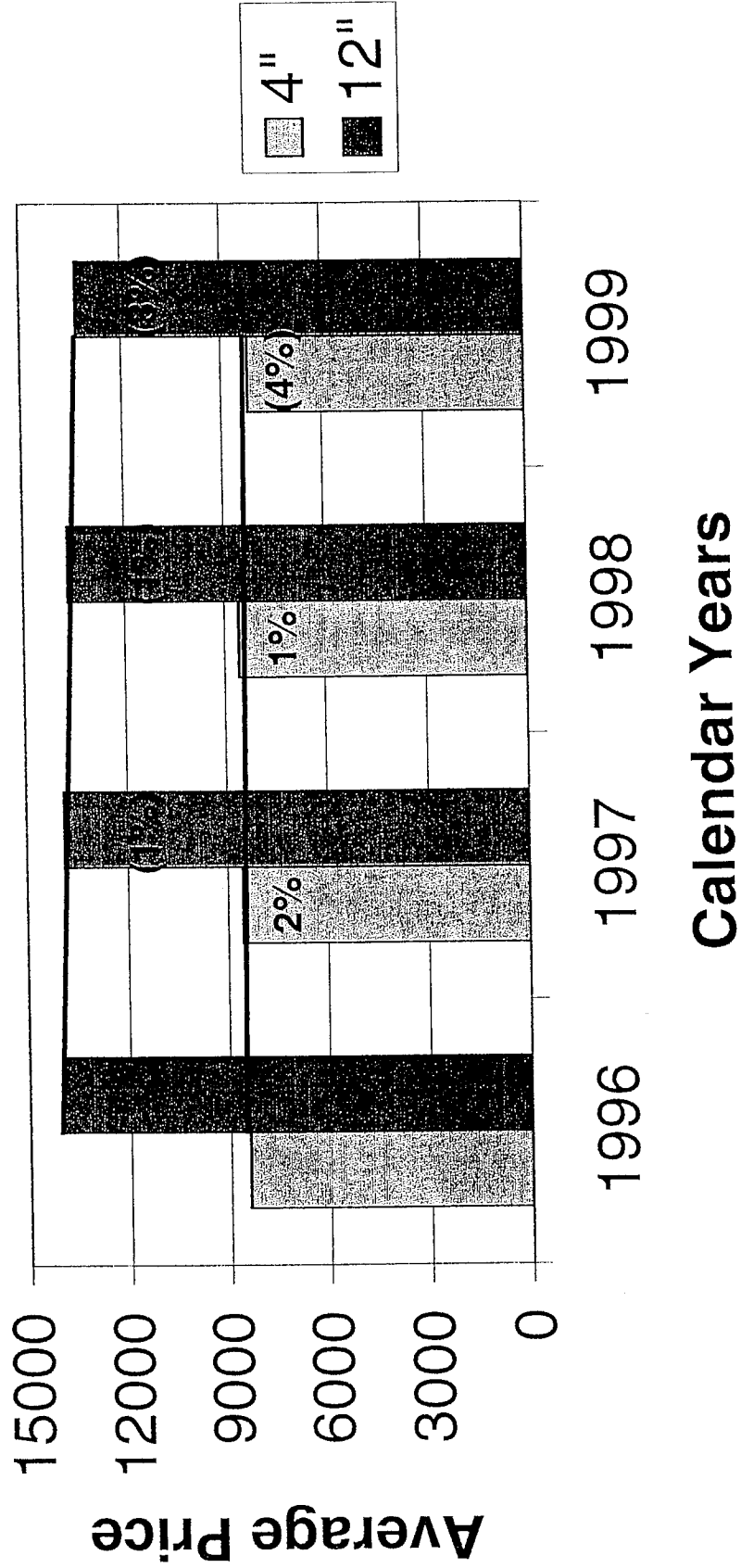
- Scot Forge Company, Inc.
Spring Grove Illinois

Leading US open die forging and ring rolling company with sales of \$ 146 Million, employs 500. Scot is a privately held ESOP which is consistently profitable. Operates facilities in Spring Grove IL, Franklin Park, IL, and Clinton, WI. Has 7 hammers, 5 presses to 3000 ton, two ring mills, and a bar planishing line. Scot is the US low cost producer for general industrial forgings for gears, bearings, machinery shafts, rolls, forged bars, trunions, etc. Has new joint venture with Ellwood to operate a 4,000 ton press complex.

Crankshaft - Price Erosion G.E.

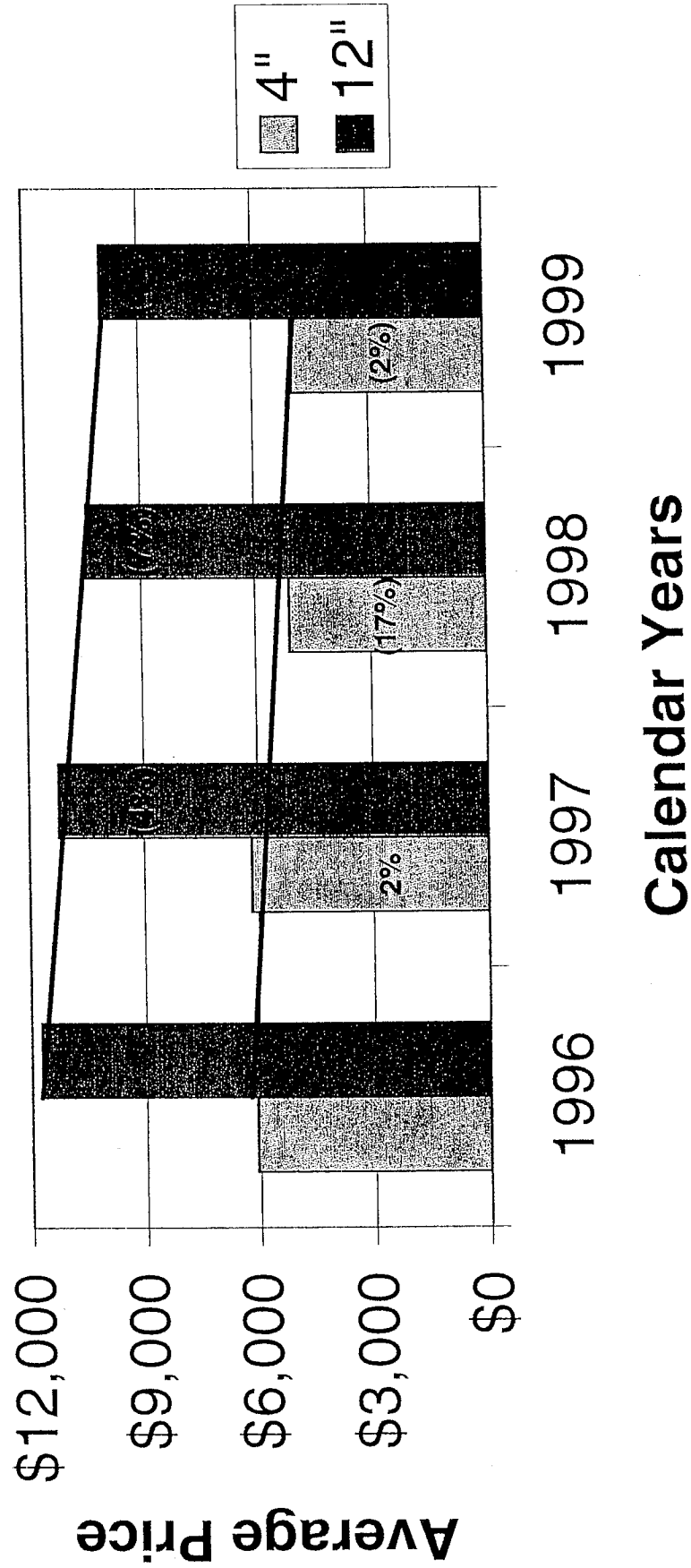


Pipe Mold Erosion Domestic Pipe Molds



Total Erosion: 4" - 1%
12" - 5%

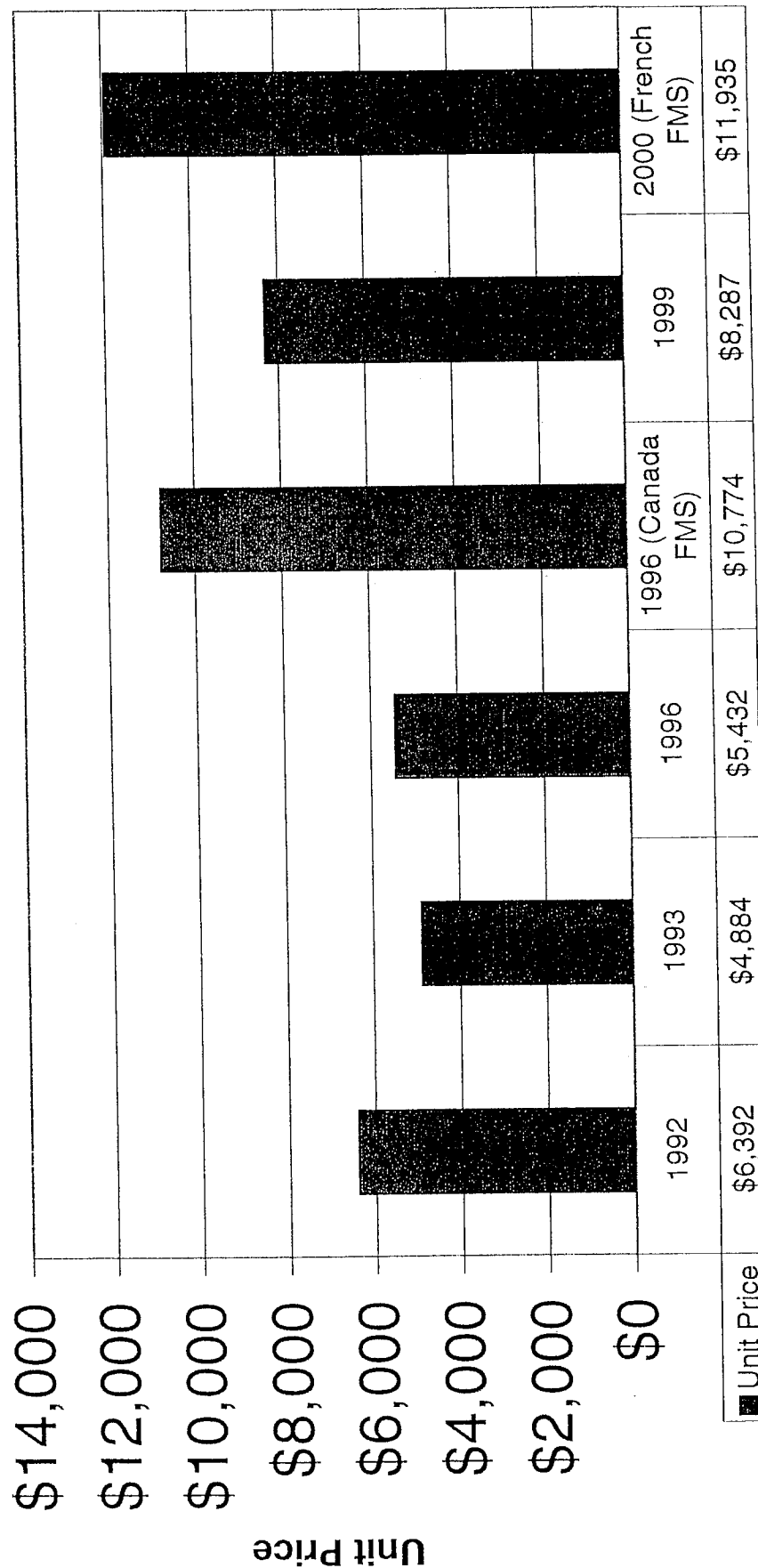
Pipe Mold - Price Erosion Export Pipe Molds



Total Erosion: 4" - 17%
12" - 15%

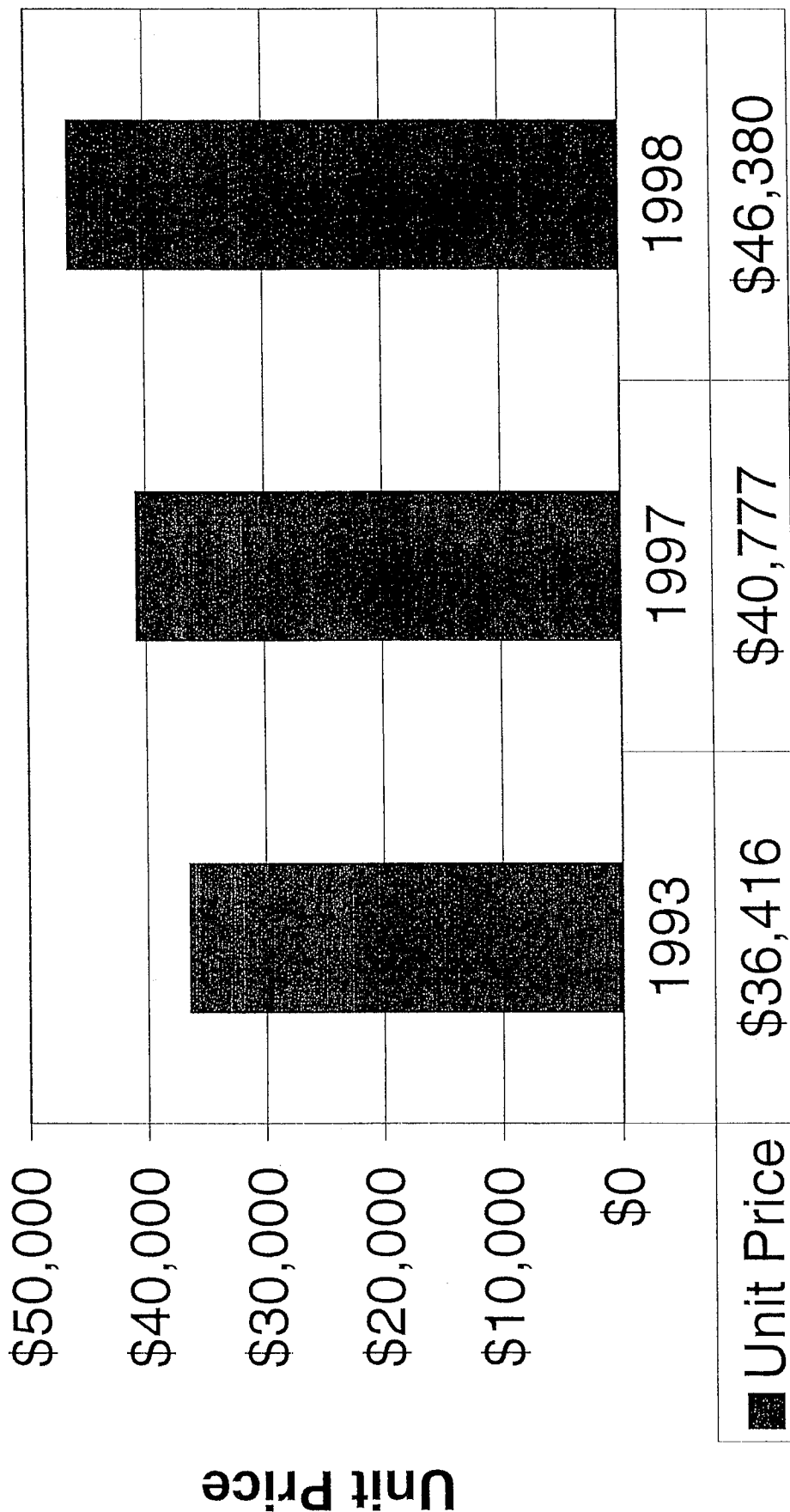
Penetrator Pricing

BLU - 109



Penetrator Pricing

BLU - 113



National Forge Company®

Irvine Plant

FY 2000 – FY 2003

Plan A

No major changes

Business as usual